



Del Rio Woods Recreation and Parks District
 c/o Donald B. King, President
 35 Rockwood Court
 San Francisco CA 94127-1031
 415.759.1461 Phone/Fax

Russian River - Mile 34.0
 City of Healdsburg
 Sonoma County CA
 2.5 mi. upstream of
 Healdsburg War Memorial Dam

Proposed Summer Dam
 6' dia water-filled bladders
 and gravel construction

Del Rio Woods Recreation and Park District
 2795 Fitch Mtn. Road
 Healdsburg CA 95448

Vicinity Map
 USGS 7.5-min quads
 Healdsburg, Jintown
 Scale: 1" = 2000' 20' & 40' contours

Nov. 21, 2003
 Scale: Noted
 By: LRE
 Sheet: 1 of 5



Oblique photo - near-vertical over spillway,
scaled to match (e) 30' x 43' spillway
Scale: 1" = +/-100'

Aerial Photo
January 6, 2003

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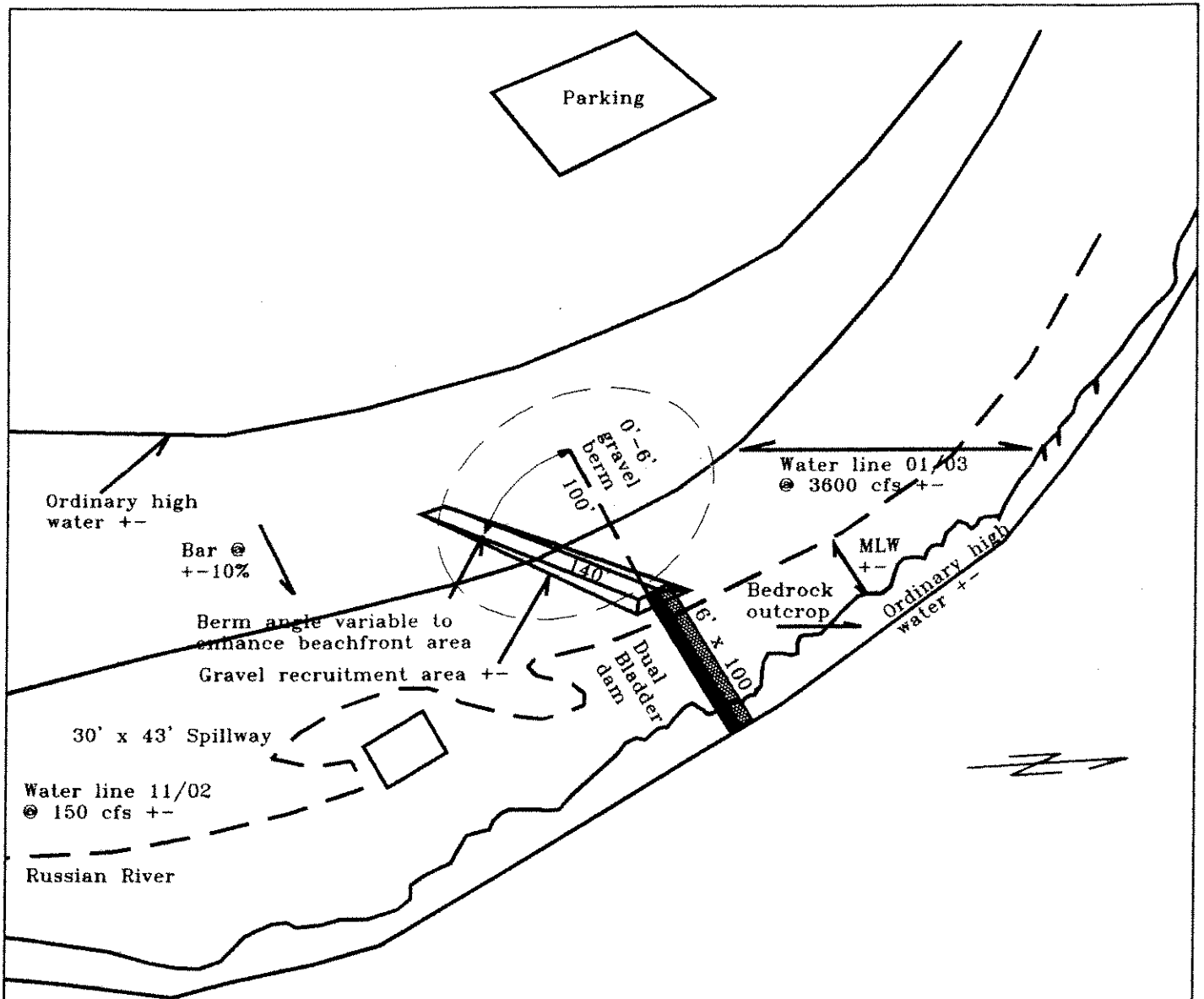
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Plan View
Scale: 1" = 100'
No Contours

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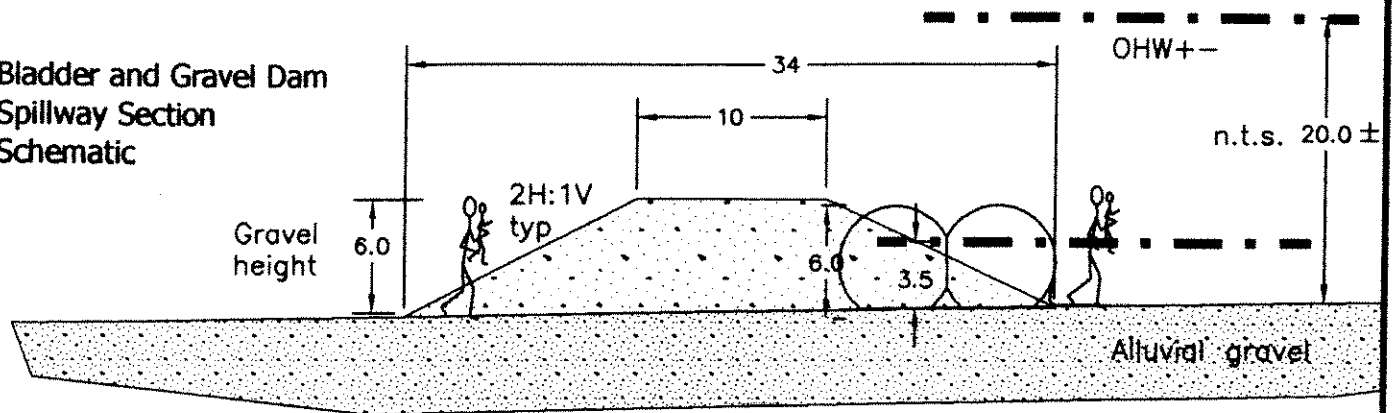
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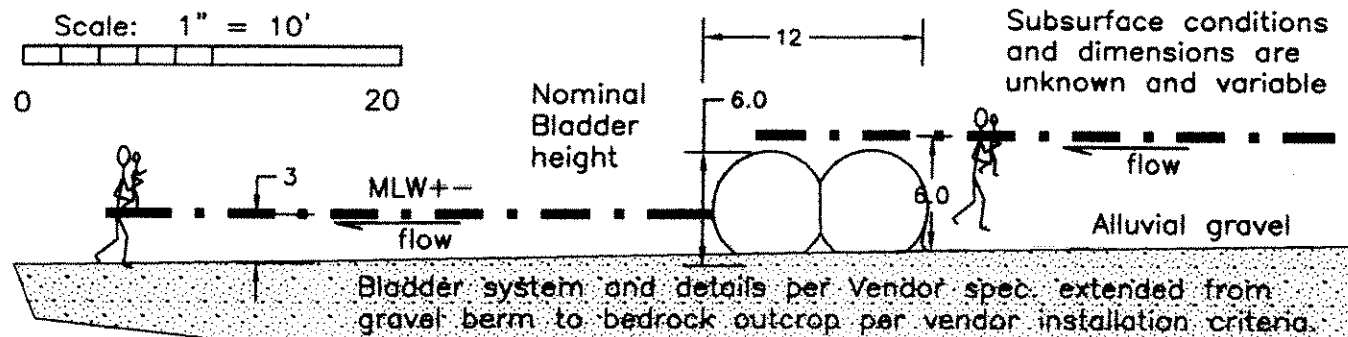
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Bladder and Gravel Dam Spillway Section Schematic



Schematic at bladder - gravel interface



Notes

Schematic at maximum pool depth in channel thalweg

- * Work area limits per U.S. Army Corps definitions: Ordinary High Water (OHW = local scour line on banks). Mean Low Water (MLW = minimum summer channel flow; typically 150 - 200 cfs).
- * Bladder installation will occur above and below the MLW elevation.
- * Site conditions below MLW will not be changed for Preconstruction, seasonal installation, or postconstruction conditions.
- * Existing alluvial deposition gravels on the west bar below OHW and above MLW will be rearranged to create the proposed seasonal berm.
- * Gravel recruitment will occur on dry land at depths of 0' - 3' in the vicinity of embankment alignment as indicated on the Plan view.
- * Berm orientation angled @ 0°-45° downstream to maximize backwater pool utility and to effectively backstop the bladder system.
- * Gravel volume for berm construction is estimated at 450 cy, assuming $L=140'$, $H_{max}=6'$, $TopWidth=10'$, $s=2H:1V$, $c/f=1.15:1$ and that the average cross-section occurs at $(2/3)L$ where $H=4'$.

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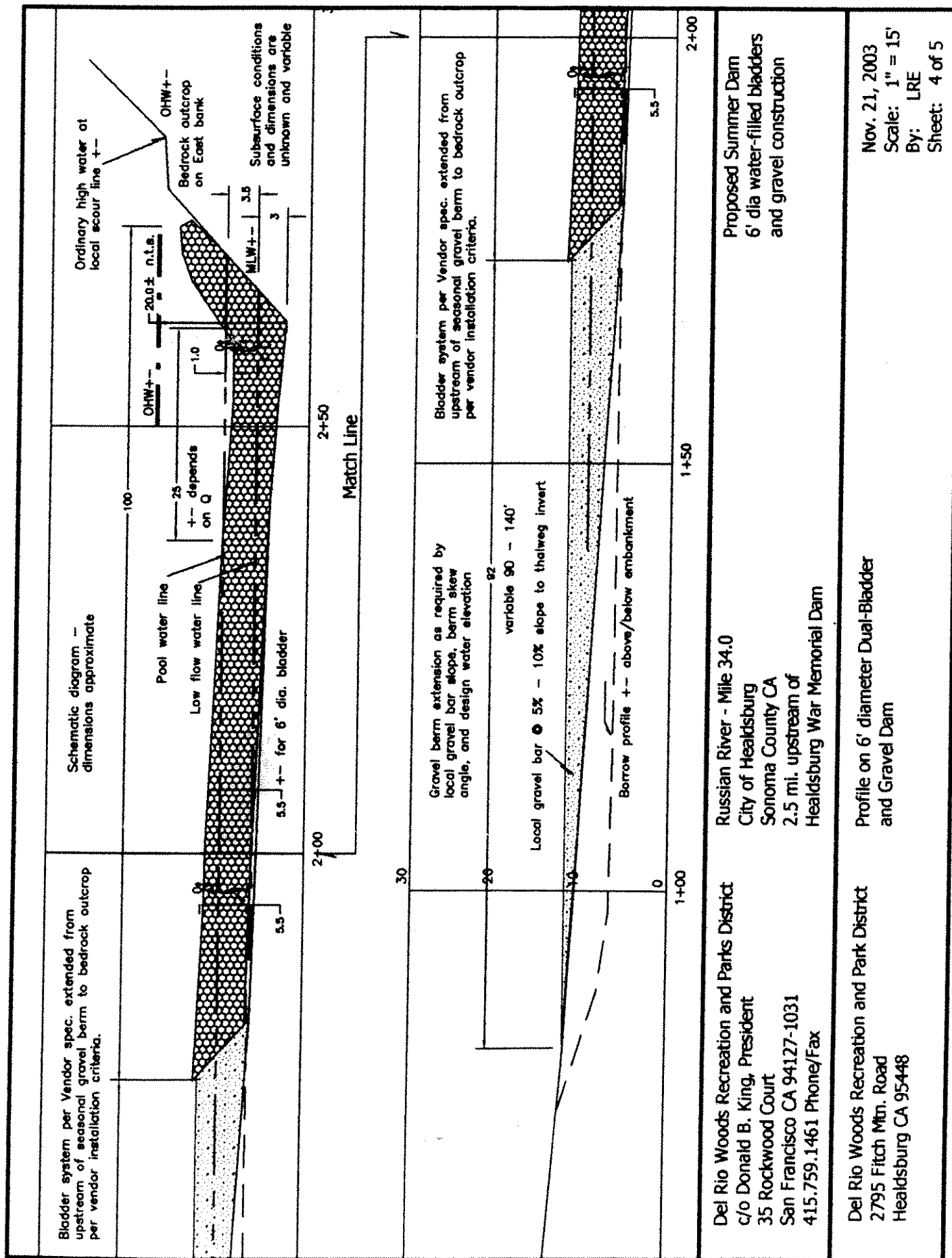
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Dam Section Details
Scale: 1" = 10'

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Bladder Dam Installation Notes

- * Vendor: Daniel Carter, Installation Technician; Superior Dam, LLC; 14535 Hwy 36, Carlotta CA 95528 @ 866.432.3267.
- * Comments provided herein are advisory in nature. Actual installation shall be per Vendor specification and per Installation Technician direction and management at time of installation.
- * System components: 40-oz nylon reinforced PVC bladder double tube barrier system, 4@2" fill ports, 4@2" drain ports, 22-oz nylon reinforced PVC pressure lock skirt and spillway skirt, 1@2" ball valve assy, 1@1" air bleed ball valve, misc. repair materials.
- * Secure bladder storage and delivery from drop location to site required.
- * 8" x 30' untreated utility pole spool for bladder installation and removal.
- * Excavator used for spool handling during installation and removal.
- * 150 filled sandbags and 8 laborers required for installation/removal purposes.
- * SD provides Installation Technician for 3 days assistance for assembly /installation. SD provides pumps, plumbing, air blower, ratchets, sockets, and other tools and hardware required for one-time installation and removal of dam.
- * Gravel dam component is constructed off channel and above MLW by others. Minor irregularities, trash, debris, objectionable materials in bladder dam alignment removed from channel invert.
- * Spooled bladder is supported using the excavator. It is unrolled manually at the desired angle relative to the river channel. Unrolling commences at the gravel berm-bladder interface. Unrolling is facilitated using a manual ratchet attached to the core of the spool.
- * During deployment, sand bags are placed on the upstream skirt edge to route base flow at max 150-200 cfs over the top of the bag system.
- * The deployed bag is inflated using water pumped from the river. The combination of weight of filled bladder and weight of water on the upstream skirt provides pressure gravity contact with the substrate. Pressure is equal to the bladder height or water depth and develops horizontal friction resistance that retains the structure in place. The dual bag configuration prevents rotation or downstream migration.

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